DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

POWER ELECTRONICS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define the latching Current of SCR.

2. Mention the classification of inverter.

3. List any two speed controlling methods of induction motor.

4. List the classification of UPS.

5. What is stabilizer ?

(5 × 2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain the characteristics of TRIAC.

2. Describe the natural commutation.

3. Explain the operation of single phase parallel inverter.

4. Draw the circuit and explain full wave controlled converter with RL load.

5. Explain the single phase full wave converter for DC motor.

6. Explain the speed control of single phase induction motor.

7. Draw and explain the block diagram of SMPS.

(5 × 6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III   (a)   Compare JFET and BJT.   8

    (b)   Describe the various methods of turning ON SCR.   7

Or

IV   (a)   Explain the structure of IGBT.   8

    (b)   Describe the forced commutation method of SCR.   7

Unit — II

V   (a)   Explain the principle of DC chopper.   8

    (b)   Describe the three phase bridge inverter.   7

Or

VI   (a)   Draw and explain the step up chopper.   8

    (b)   Draw three phase bridge converter with resistive load.   7

Unit — III

VII   (a)   Explain the single phase semi converter for DC drive.   8

    (b)   Describe the stator frequency control method.   7

Or

VIII   (a)   Explain the solid state control of fan regulator.   8

    (b)   Explain the speed control methods in three phase induction motor.   7

Unit — IV

IX   (a)   Explain the principle of the servo stabilizer.   8

    (b)   Describe the line interactive UPS.   7

Or

X   (a)   Explain the boost converter.   8

    (b)   Differentiate the linear power supply with SMPS.   7